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ABSTRACT

A exploratory study investigated the link between verbal responses to environmental signs, written representations of the same signs, and recall of the intended meaning of the written signs among children from homes in the low and middle socio-economic level. Subjects, 75 nursery school and beginning kindergarten children, aged 3 to 5.10 years, were tested for responses to 12 logos and/or environmental signs. Results indicated low, significant relationships between oral response to logos and written representation, and moderate, significant relationships between oral responses to logos and recall for the younger group. Low, non-significant relationships were found for the older group. Findings suggest that younger children rely on the interrelatedness of speaking, reading and writing for communication, and that older children may lose focus of the communicative aspect of written language, especially in school related tasks. Results also suggest that emergent literacy experiences that are initiated by the child may be more "meaningful and relevant" to experiencing literacy than are school imposed reading and writing tasks, and that intentional messages constructed by the child may provide the cognitive basis for understanding the interrelatedness of oral and written language. (Author/NKA)

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Preschoolers' Psychomotor Responses to Logos: What Does This Mean for Emergent Literacy?

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Abstract

This study investigated the link between verbal responses to environmental signs, written representations of the same signs and recall of the intended meaning of the written signs among children from low and middle socio-economic homes. Seventy-five nursery and beginning kindergarten school aged children, ages 3.0 - 5.10, were studied. Data was subjected to Chi Square and Pearson Product Moment Correlation analysis. Results reveal a significant difference between the younger and older group for complexity of written response, Chi Square = 10.82, d.f. = 4, $p < .02$; and recall (read back) of the written signs, Chi Square = 22.08, d.f. = 3, $p < .001$. Correlation analysis revealed low, significant relationships between oral response to logos and written representation; and moderate, significant relationships between oral responses to logos and recall for the younger group. Low, non-significant relationships were found for the older group. The authors suggest that younger children rely on the interrelatedness of speaking, reading and writing for communication. Older children may lose focus of the communicative aspect of written language, especially in school related tasks. Suggestions for helping children make the transition are included.

Preschoolers' Psychomotor Responses to Logos:

What Does This Mean for Emergent Literacy?

It is likely that speaking, reading and writing are interrelated tasks used by young children as they engage in literacy activities and attempt to code, organize and understand print.

Research has shown that the young child is a competent user of language (Menyuk, 1963) and understands the message of common environmental signs well before school entrance ((Ylisto, 1967; Hiebert, 1981; Goodman and Altwerger, 1981; Mason, 1980). Likewise, Lipa (1984) found that young children's responses to environmental signs could be coded in terms of specific and generic word labels when presentation included full contextual support or limited contextual support.

Research by Clay (1975) and Ferreiro (1982) reported progressive refinements in the writing of young children. Clay (1975) described writing behaviors such as scribbling, drawing, copying and forming alphabet letters. Further, she identified two principles children discover about writing, (1) the sign concept (letter like shapes and letters carry a message), and (2) the message concept (messages the child speaks can be written down).

The formulation of intentional messages from oral to written and the "read back" of these messages has been investigated by a number of researchers, (Dyson, 1985; Sulzby, 1985) who found that young children, using a variety of print forms and pictures, did read back their intended messages. Communicating a message in writing

is a form of intentional behavior that stems from the writer's need to express information to another person.

Ferreiro (1982) studied young children's understanding of the relationship between oral meanings and graphic symbols. Her tasks differed from other researchers in that she provided the children with the message they were to produce. She identified five successive levels of writing and "reading" in her study.

The present study attempts to investigate the link between verbal responses to environmental signs, written representations of the same signs and recall (read back) of the written signs among preschool children.

The following hypotheses were tested:

HYPOTHESIS 1. There will be a significant difference in the complexity of motor responses between younger and older children to the task of "writing" logos from immediate, short term memory.

HYPOTHESIS 2. There will be significant difference in the recall of written representations of logos between younger and older children. Younger children will recall fewer logos/signs than older children.

HYPOTHESIS 3. There will be a significant difference in the complexity and of motor responses between males and females to the task of "writing" logos from immediate, short term memory. The "writing" of males will be less complex than that of females.

HYPOTHESIS 4. There will be a significant, positive relationship between LOGO and WORD LABEL identification and the written symbol produced.

HYPOTHESIS 5. There will be a significant, positive relationship between LOGO and WORD LABEL identification and recall of the written symbol produced.

HYPOTHESIS 6. There will be a significant, positive relationship between children's written response (WR) to logos and recall (RC) of that response for both younger and older groups.

METHOD

Seventy-five nursery school children, ages 3.0 - 5.10, were tested using the LIPA LOGO TEST (LLT) and two variations of this test (written production of logo from memory and read back [recall] of written symbol).

The LLT consists of a series of 12 logos and/or environmental signs. Children are presented with labels that have been removed from products that are commonly seen in the environment, e.g., Pepsi, Coke, McDonald's. Children respond to the query, "What is this?" Responses are recorded as generic if the child responds "pop," "soda," "coke" for Pepsi; specific if the child responds by correctly naming the label, that is, Pepsi for Pepsi, Coke for Coke. A second part of the LLT includes word labels, of the same 12 products, that have been removed from the product label (limited contextual support). Children who respond to the query, "What is this?" Responses are recorded as generic if the child responds to the word label with "pop," "soda," or "coke" for Pepsi; specific if the child responds by correctly naming the label, e.g., "Pepsi" for Pepsi. Lipa (1984) found an age developmental progression from generic to specific labelling for both logo and word presentation among preschool children.

Two additional tasks related to the LLT included (1) written reproduction of logo from memory (WR), and (2) read back (recall) of the written logo (RC). Immediately following presentation of the 12 logos and the 12 word labels children were presented with blank paper and eight crayons of mixed colors. The examiner initiated the testing by saying, "Do you remember the signs we just looked at"? "Do you remember the sign for Pepsi"? "Make the sign for Pepsi." The specific product name was said to the child regardless of how s/he had responded to the logo. If the child appeared confused or did not respond to the task, the generic name was also given, e.g., "Remember the sign for pop?"; "Make that sign." As the children made the sign on paper, the examiner replicated the "writing" on a scoring sheet.

Read back (recall) of the child's written response to the logos and word labels immediately followed the writing task. Children were asked to name the signs they had made in the order they were made. For example, the examiner pointed to the first sign and said, "What is this?", What does this say?".

Writing responses were coded by the following categories: No Response (refusal), Scribble (indiscriminate lines, marks), Geometric/ Picture (circles, squares, rectangles, triangles and drawings of the logo, e.g., McDonald arches), Letters (one or more letters), and Spelling (two or more letters with attempt to use sound-symbol relationship). These categories were based on the work of Clay (1975) and Ferreiro (1982).

Read back (recall) of writing was scored by assigning one point to each written sign correctly recalled (either generic or specific response). A total score of 12 was possible. Recall scorers were grouped into the following categories: no recall (0), low recall (1-3), medium recall (4-7), high recall (8-12).

The data was analyzed by Chi Square procedure using two age groups, 3.0 - 4.5 and 4.6 - 5.10, in relation to (1) Written Responses (WR) to logo by age group using a 5 x 2 table, and (2) Read back (Recall of Writing [RC]) by age group using a 4 x 2 table.

Differences between the younger (3.0 - 4.5) group's male/female writing (WR) by age group were analyzed using a 3 x 2 Chi Square analysis with the categories: Scribble, Geometric/Picture, Letter/Spelling. Further study of the data was conducted using correlational analysis to determine the relationship between oral identification of logos/word labels and children's (1) Written and (2) Recall responses. All categories were scored on a 12 point basis for this analysis.

RESULTS

Hypothesis 1 was supported. Children's writing of logos represented a developmental progression from least complex (Scribble) to more complex (Spelling) for the two age groups (younger, 3.0 - 4.5; older, 4.6 - 5.10). Chi Square = 10.82, df = 4, $p < .02$. (See Table 1.)

Hypothesis 2 was supported. Children's read back (Recall) of their writing represented a progression from least number recalled to most recalled for the two age groups (younger, 3.0 - 4.5; older, 4.6 - 5.10). Chi Square = 22.08, df = 3, $p < .001$. (See Table 2.)

Hypothesis 3 was partially supported. A significant difference between male/female writing was found at the younger (3.0 - 4.5) age group with females producing more complex writing than males. Chi Square = 6.16, df = 2, $p < .05$. No difference between male/female writing was found among the older group (4.6 - 5.10). Chi Square = 3.16, df = 3, N.S.

Insert Tables 1 and 2 About Here

Hypothesis 4 was partially supported. A low correlation was found for the younger (3.0 - 4.5) group's oral response to LOGO and writing. Specific response: $r = .25$, $p < .07$; Generic response: $r = .32$, $p < .02$. A low, nonsignificant correlation was found for the older group (4.6 - 5.10). Specific response: $r = .15$, N.S.; Generic response: $r = .14$, N.S. (See Tables 3 and 4.)

A low but significant correlation was found for the younger (3.0 - 4.5) and older (4.6 - 5.10) group's response to Word Label (specific) and Writing (WR), $r = .28$, $p < .05$; $r = .34$, $p < .02$ respectively. Lower, nonsignificant correlations were found for the younger (3.0 - 4.5) and older (4.6 - 5.10) group's response to Word Label (generic) and Writing (WR), $r = .23$, $p < .08$; $r = .21$, N.S. respectively. (See Tables 3 and 4.)

Hypothesis 5 was partially supported. A moderate and significant correlation was found for the younger (3.0 - 4.5) group's response to Logo and Read back (recall) (RC) of writing. Specific response:

$r = .55$, $p < .0005$; Generic response: $r = .28$, $p < .05$. No correlations were found for the older (4.6 - 5.10) group. Specific response: $r = .02$, N.S.; Generic response: $r = .00$, N.S. (See Tables 3 and 4.)

A moderate, highly significant correlation was found for the younger (3.0 - 4.5) group's response to Word Labels and Read back. Specific response: $r = .73$, $p < .0001$; Generic response: $r = .75$; $p < .0001$. (See Tables 3 and 4.)

Low, nonsignificant correlations were found for the older (4.6 - 5.10) group's response to Word Labels and Read back. Specific response: $r = .18$, N.S.; Generic response: $r = .07$, N.S. (See Tables 3 and 4.)

Hypothesis 6 was partially supported. A low-moderate correlation between written responses to logos (WR) and Recall of those responses (RC) was found for the younger group (3.0 - 4.6), $r = .28$, $p < .05$, and the older group (4.6 - 5.10), $r = .22$, $p < .09$. (See Tables 3 and 4.)

Insert Tables 3 and 4 About Here

DISCUSSION

Results of Chi Square analysis support developmental changes in the complexity of written responses and the read back of those responses. As expected, the younger children produced more scribble writing and fewer read backs than the older children. Variability within groups was also noted with a gradual movement toward alphabetic

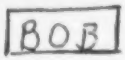
writing. Children appeared to use the highest level of motor reproduction of which they were capable when asked to "make a sign for _____." For example, more three year olds scribbled, often selecting crayons that represented the logo colors. The resulting papers had 12 independent scribble marks, some of which were "read back."

Four year old children predominantly used Geometric/Pictorial forms to represent the logos. These forms often resembled the logo shape and color with read back of approximately 1-3 written signs.

The older groups's (4.6 - 5.10) writing was represented by Geometric Forms/Pictures, Letters and Spelling. The Letters and Spelling production closely resembled that reported by Ferreiro (1982). Children wrote 1, 2 or 3 of the same letters for each logo, often using a change in sequence. For example, Betty, a four year old, wrote the following letters SETO,

, to represent McDonald's and Coke. Spelling was used by some children who "sounded out" the words and either used the initial consonant "P" for Pepsi, "M" for McDonald's, "B" for Burger King, or a series of consonants. Mark's paper is an example of the latter, CLD (Kool Aid), BR (Burger King), CUAN (crayons). Letters and Spelling did not help children read back the signs. While they could encode from speech to writing, interestingly, they were not able to decode their writing.

Pictorial representation of the logo was an aid to read back. Children who used only Letters and Spelling to represent the logo had low to moderate read back recall; those who used Letters plus Pictures had moderate to high recall. Some examples of Pictorial/Letter

representations follow:  (Bubble Yum)

(M & M's) (McDonald's Fries)

Memory in the form of read back of the written logo fell within low recall (younger group) to medium recall (older group). The authors conclude that the preschool child's memory for written products is limited when the writing task is imposed on the child and not initiated as a personal writing experience.

Identification of LOGO and WORD LABELS is positively related, in a limited way, to the writing and read back tasks for the younger group but not the older group. Analysis of the data revealed a higher relationship between the variables for the younger group than the older group. The correlations approaching 0 for the older group indicate no relationship among the variables.

The authors suggest that the older group viewed each task as separate and unrelated. The concentration and attention level of the older children to the demands of the writing task may have negated the influence of prior identification tasks, e.g., LOGO, WORD LABEL. Wolf and Garner (1979), in their discussion of symbolic growth, indicate that young children often concentrate on different aspects of symbolic processes. Development of symbolic processing involves differentiation and distance and then a linking together in a new way. The older (4.6 - 5.10) group may be reflecting this differentiation of symbol.

SUMMARY

In summary, although this study is exploratory in nature, several tentative statements can be made about preschool children's oral, written and read back (recall) responses. Emergent literacy experiences

that are initiated by the child may be more meaningful and relevant to "experiencing literacy" than reading and writing tasks that are imposed on the child. Intentional messages constructed by the child may provide the cognitive basis for understanding the interrelatedness of oral and written language. Reading and writing tasks that are imposed on the child are more representative of school learning tasks than those initiated by the child. The low read back scores of most children in this study indicate that they did not view the reading-writing-read back tasks as interrelated. This information has implication for nursery and kindergarten school teachers who instruct children in letter/sound relationships and sight word identification. Children may not understand the purpose of the lessons nor the relationship between letters/sounds and their application to reading.

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Table 1

Total Writing Responses by Age, According to Scribble, Geometric/Picture Form, Letters and Spelling (N = 75)

	Age	No Response	Scribble	Geo./Pic.	Letters	Spelling	Total
Younger	3.0	1	14	4	1	0	20
	4.5	0	3	5	5	2	15
Older	4.6	0	2	9	4	5	20
	5.10	0	0	8	6	6	20
		1	19	26	16	13	75

Chi Square = 10.82, df = 4, $p < .02$

Table 2

Total Recall (Read Back) Responses by Age According to No Recall, Low, Medium, and High Recall (N = 75)

	Age	No Recall	1 - 3	4 - 7	8 - 12	Total
Younger	3.0	13	7	0	0	20
	4.5	0	12	1	2	15
Older	4.6	1	13	6	0	20
	5.10	0	8	8	4	20
		14	40	15	6	75

Chi Square = 22.08, df = 3[1], $p < .001$

Table 3

Correlation Matrix of Variables Logo Specific, Logo Generic, Word Specific, Word Generic, Writing and Recall for Ages 3.6 - 4.5

Label	LS	LG	WS	WG	WR	RC
LS	1.00	0.67	0.67	0.64	0.25	0.56***
LG	0.67	1.00	0.51	0.63	0.32**	0.28**
WS	0.67	0.51	1.00	0.88	0.28**	0.73***
WG	0.64	0.63	0.88	1.00	0.23	0.75***
WR	0.23	0.32	0.28	0.23	1.00	0.28
RC	0.56	0.28	0.73	0.75	0.28	1.00

**Significant at .05 level
***Significant at .001 level

Table 4

Correlation Matrix of Variables Logo Specific Logo Generic, Word Specific, Word Generic, Writing and Recall for Ages 4.6 - 5.5

Label	LS	LG	WS	WG	WR	RC
LS	1.00	0.29	0.65	0.37	0.15	0.02
LG	0.29	1.00	0.31	0.57	0.14	0.00
WS	0.65	0.31	1.00	0.77	0.34	0.18
WG	0.37	0.57	0.77	1.00	0.21	0.07
WR	0.15	0.14	0.34	0.21	1.00	0.22
RC	0.02	0.00	0.18	0.07	0.22	1.00